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(72) Inventors:
• Yamamoto, Kenji, c/o Magnetic Research Center
Takefu-shi, Fukui-ken (JP)
• Tatami, Koro, c/o Magnetic Research Center
Takefu-shi, Fukui-ken (JP)
• Minowa, Takehisa,
c/o Magnetic Research Center
Takefu-shi, Fukui-ken (JP)

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(71) Applicant: **SHIN-ETSU CHEMICAL CO., LTD.**
Chiyoda-ku Tokyo (JP)

(74) Representative: **Stoner, Gerard Patrick et al**
MEWBURN ELLIS York House 23 Kingsway
London WC2B 6HP (GB)

(54) **R-Fe-B base permanent magnet materials**

(57) A R-Fe-B base permanent magnet material is composed of a R-Fe-B magnet alloy which contains 87.5-97.5 vol% of a $\text{Fe}_{14}\text{R}_2\text{B}_1$ primary phase and 0.1-3 vol% of a rare earth oxide or a rare earth and transition metal oxide. The alloy contains as a major component in its metal structure a compound selected from among zirconium-boron compounds, niobium-boron com-

pounds and hafnium-boron compounds. The compound has an average grain size of at most $5\text{ }\mu\text{m}$ and is uniformly distributed within the alloy such that the maximum interval between neighboring grains of the compound is at most $50\text{ }\mu\text{m}$. Rare-earth permanent magnet materials of this composition and structure have excellent magnetic properties.

FIG.2

